
Ryan J. Hubbard

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ACADEMIC EMPLOYMENT

University at Albany

2024 – present **Assistant Professor**
Department of Psychology, Cognitive Division

University of Illinois at Urbana-Champaign

2021 – 2024 **Postdoctoral Research Associate**
PI: Kara Federmeier

2018 – 2021 **Beckman Institute Postdoctoral Fellow**
PIs: Kara Federmeier, Lili Sahakyan, Aaron Benjamin

HRL Laboratories

2017 – 2018 **Postdoctoral Research Scientist**
Information and System Sciences Lab

EDUCATION

University of Illinois at Urbana-Champaign

2014 – 2017 **Ph.D. Psychology (Cognitive Neuroscience)**
Advisor: Kara Federmeier, Ph.D.
Thesis: “Precursors and Downstream Consequences of Prediction in Language Comprehension”

2011 – 2014 **M.A. Psychology (Cognitive Neuroscience)**
Advisor: Brian Gonsalves, Ph.D.
Thesis: “Unitization and semantic information”

University of California, Davis

2006 – 2010 **B.S. Psychology (Biological Emphasis)**
Magna Cum Laude with Departmental Distinction and Honors

SPECIALIZED TRAINING

September 2022	Analyzing Neural Oscillations and Aperiodic Activity Workshop SPR workshop on cutting-edge analyses of neural oscillations
May 2022	NSF Leading Edge Workshop on Co-Registration Methods workshop on co-registering eyetracking and EEG collection
September 2018	EEG Frequency-Tagging Workshop (PI Bruno Rossion) Best practices for running a frequency tagging study and analyzing data
September 2016	Time-Frequency Analysis Workshop (PI Mike X. Cohen) Methods and best practices for time-frequency analyses on EEG data
August 2012	fMRI Training Course (PI John Jonides) Statistics, physics, and methods of fMRI data collection and analysis
July 2010	ERP Boot Camp (PI Steve Luck) Basic principles of EEG, filtering, averaging, baseline, source localizing

AWARDS AND HONORS

2020	NIA R01: Spontaneous Speech and Health Disparities in Risk of Cognitive Decline: WHICAP Offspring Ancillary Study (role: consultant)
2018	Beckman Postdoctoral Fellowship Award
2018	HRL CRAD / ELM Achievement Award
2016	UIUC Cognitive Neuroscience Divisional Fellowship
2015	Named on List of Teachers Ranked as Excellent at UIUC
2014	UIUC Cognitive Science / Artificial Intelligence Award
2011 – 2013	IGERT NeuroEngineering Fellowship

PUBLICATIONS & PEER-REVIEWED PROCEEDINGS

Jacobs, C.L., **Hubbard, R. J.**, Grobol, L., & Federmeier, K.D. (under review). Uncovering patterns of semantic predictability in sentence processing. *Journal of Memory and Language*.

Whitlock, J.S., Ding, H., **Hubbard, R.J.**, & Sahakyan, L. (accepted). Delayed Testing in Directed Forgetting Dissociates Active and Passive Forms of Forgetting. *Journal of Experimental Psychology: Learning, Memory, & Cognition*.

Hubbard, R. J., & Federmeier, K.D. (2024). Altered oscillatory neural dynamics related to word prediction in older adult readers. *Language, Cognition and Neuroscience*, 1-18.

Hubbard, R. J., & Federmeier, K.D. (2024). The impact of linguistic prediction violations on downstream recognition memory and sentence recall. *Journal of Cognitive Neuroscience*, 36(1), 1-23.

Whitlock, J.S., **Hubbard, R.J.**, Ding, H., & Sahakyan, L. (2023). Trial-level fluctuations in pupil dilation during encoding reflect strength of relational binding. *Journal of Experimental Psychology: Learning, Memory, & Cognition*.

Lai, V. T., **Hubbard, R.J.**, Ku, L., & Pfeifer, V. (2023). Electrophysiology of non-literal language. In *Language Electrified: Techniques, Methods, Applications, and Future Perspectives in the Neurophysiological Investigation of Language*, 613-646. Edited by Grimaldi, M., Shtyrov, Y., Brattico, E. Springer.

Hubbard, R. J., & Sahakyan, L. (2023). Differential recruitment of inhibitory control processes by directed forgetting and thought substitution. *Journal of Neuroscience*, 43(11), 1963-1975.

Hubbard, R.J., Bulkes, N.Z., & Lai, V.T. (2023). The roles of literality, predictability, and decomposability in compositional processing during idiom comprehension. *Psychophysiology*, e14269.

Jacobs, C.L., **Hubbard, R. J.**, & Federmeier, K. D. (2022). Masked language models directly encode linguistic uncertainty. *Proceedings of the Society for Computation in Linguistics*, 5(1), 225-228.

Hubbard, R. J., & Sahakyan, L. (2021). Separable neural mechanisms support intentional forgetting and thought substitution. *Cortex*, 142, 317-331.

Hubbard, R. J., Zadeh, I., Jones, A.P., Robert, B., Bryant, N.B., Clark, V.P., & Pilly, P.K. (2021). Brain connectivity alterations during sleep by closed-loop transcranial neurostimulation predict meta-memory sensitivity. *Network Neuroscience*, 5(3), 734-756.

Hubbard, R. J., & Federmeier, K.D. (2021a). Dividing attention influences contextual facilitation and revision during language comprehension. *Brain Research*, 1764, 147466.

Hubbard, R. J., & Federmeier, K.D. (2021b). Representational pattern similarity of electrical brain activity reveals rapid and specific prediction during language comprehension. *Cerebral Cortex*, 31(9), 4300-4313.

Pilly, P. K., Skorheim, S. W., **Hubbard, R. J.**, Ketz, N. A., Roach, S. M., Lerner, I., Jones, A.P., Robert, B., Bryant, N.B., Hartholt, A., Mullins, T. S., Choe, J., Clark, V.P., & Howard, M.D. (2020). One-shot tagging during wake and cueing during sleep with spatiotemporal patterns of transcranial electrical stimulation can boost long-term metamemory of individual episodes in humans. *Frontiers in Neuroscience*, 13, 1416.

Lucas, H.D., Gupta, R.S., **Hubbard, R.J.**, & Federmeier, K.D. (2019). Adult age differences in the use of conceptual combination as an associative encoding strategy. *Frontiers in Human Neuroscience*, 13, 339.

Hubbard, R. J., Rommers, J., Jacobs, C. L., & Federmeier, K. D. (2019). Downstream behavioral and electrophysiological consequences of word prediction on recognition memory. *Frontiers in Human Neuroscience*, 13, 291.

Hubbard, R.J., Sipolins, A., & Zhou, L. (2017). Enhancing Learning Through Virtual Reality and Neurofeedback: A First Step. *Proceedings of the 7th International Learning Analytics & Knowledge Conference*, Vancouver, BC, Canada.

Lucas, H.D., **Hubbard, R.J.**, & Federmeier, K.D. (2017). Flexible conceptual combination: Electrophysiological correlates and consequences for associative memory. *Psychophysiology*, 54(6), 833-847.

Sturgeon, B.A., **Hubbard, R.J.**, Schmidt, S.A., & Loucks, T. (2015). High F0 and musicianship make a difference: Pitch-shift responses across the vocal range. *Journal of Phonetics*, 51, 70-81.

POSTER PRESENTATIONS & TALKS

Whitlock, J.S., **Hubbard, R.J.**, & Sahakyan, L. (2024). Temporal dynamics of the pupillary old-new effect: Disentangling true and false recognition. Symposium talk to be presented at *The 65th Annual Meeting of the Psychonomic Society*, New York City, NY.

Hubbard, R.J., & Federmeier, K.D. (2024). Neural Pre-Activation During Language Comprehension Predicts Future False Memory. Poster to be presented at *The 65th Annual Meeting of the Psychonomic Society*, New York City, NY.

Jacobs, C.L., Grobol, L., **Hubbard, R.J.**, & Federmeier, K.D. (2024). Modeling evidence for non-competitive lexical selection in serial cloze. Poster presented at *The 2024 Meeting of the Society for Computation in Linguistics*, Irvine, CA.

Hubbard, R.J., & Sahakyan, L. (2023). Continuing to forget: A multi-cue item-method directed forgetting study. Poster presented at *The 64th Annual Meeting of the Psychonomic Society*, San Francisco, CA.

Jacobs, C.L., **Hubbard, R.J.**, & Federmeier, K.D. (2023). Quantifying the semantic heterogeneity of cloze responses. Symposium talk presented at *The 64th Annual Meeting of the Psychonomic Society*, San Francisco, CA.

Hubbard, R.J., & Federmeier, K.D. (2023). Probing neural representations of linguistic stimuli with representational similarity analysis. Invited symposium talk presented at *The 63rd Annual Meeting of the Society for Psychophysiological Research*, New Orleans, LA.

Chiu, H., **Hubbard, R.J.**, & Federmeier, K.D. (2023). Probing Prediction-Related Processes in Language Using an EEG Word Stem Completion Paradigm. Poster presented at *The 63rd Annual Meeting of the Society for Psychophysiological Research*, New Orleans, LA.

Hubbard, R.J., Jacobs, C.L., & Federmeier, K.D. (2023). Reassessing the N400 as an index of linguistic prediction. Poster presented at *The 63rd Annual Meeting of the Society for Psychophysiological Research*, New Orleans, LA.

Whitlock, J.S., Lo, Y., **Hubbard, R.J.**, Ding, H., & Sahakyan, L. (2023). Pupil dilations predict relational binding in both viewing and accuracy. Poster presented at *The 95th Annual Meeting of the Midwestern Psychological Association*, Chicago, IL.

Hubbard, R.J., & Federmeier, K.D. (2023). Electrophysiological Changes Across Two Days of Reading – Prediction Updating, or Memory Retrieval? Poster presented at *The 30th Annual Meeting of the Cognitive Neuroscience Society*, San Francisco, CA.

Hubbard, R.J., & Sahakyan, L. (2023). Recruitment of domain-general inhibitory control supports suppression of encoding of episodic memories. Invited symposium talk presented at *The 30th Annual Meeting of the Cognitive Neuroscience Society*, San Francisco, CA.

Whitlock, J.S., Lo, Y., Ding, H., **Hubbard, R.J., & Sahakyan, L. (2022).** First Gaze Assessment of the Selective Rehearsal Account of Item-Method DF. Poster presented at *The 63rd Annual Meeting of the Psychonomic Society*, Boston, MA.

Hubbard, R.J., & Federmeier, K.D. (2022). Replacing high-pass filters with Blink-Identified Robust Detrending: Put a BIRD on it! Poster presented at *The 62nd Annual Meeting of the Society for Psychophysiological Research*, Vancouver.

Hubbard, R.J., & Federmeier, K.D. (2022). Investigating Electrophysiological Correlates of Prediction Updating in a Two-Day Reading Study. Poster presented at *The 62nd Annual Meeting of the Society for Psychophysiological Research*, Vancouver.

Hubbard, R.J., & Sahakyan, L. (2022). Direct suppression, but not thought substitution, recruits top-down inhibitory control mechanisms. Poster presented at *The 29th Annual Meeting of the Cognitive Neuroscience Society*, San Francisco, CA.

Whitlock, J.S., Sahakyan, L., & **Hubbard, R.J. (2022).** Pupil-size fluctuations during learning predict relational binding. Poster presented at *The 94th Annual Meeting of the Midwestern Psychological Association*, Chicago, IL.

Hubbard, R.J. & Sahakyan, L. (2020). ERP and representational similarity analyses reveal the temporal dynamics of intentional forgetting and thought substitution. Poster presented at *The 16th Annual Meeting of the Context and Episodic Memory Symposium*, Virtual Meeting.

Hubbard, R.J., Jiang, L., & Sahakyan, L. (2020). ERP and Oscillatory Dynamics Differentiate Forget and Thought Substitution Cues in Intentional Forgetting. Poster presented at *The 27th Annual Meeting of the Cognitive Neuroscience Society*, Virtual Meeting.

Hubbard, R.J. & Federmeier, K.D. (2019). Early Neural Signals of Prediction During Language Comprehension Are Modulated by Constraint and Expectancy. Poster presented at *The 11th Annual Meeting of the Society for the Neurobiology of Language*, Helsinki, FI.

Hubbard, R.J. & Federmeier, K.D. (2019). Dividing Attention During Language Comprehension Affects ERP Components of Contextual Integration and Revision. Poster presented at *The 11th Annual Meeting of the Society for the Neurobiology of Language*, Helsinki, FI.

Hubbard, R.J., Ketz, N.A., Jones, A.P., Robert, B., Bryant, N.B., Skorheim, S.W., Roach, S., Clark, V.P., & Pilly, P.K. (2018). Memory reactivation with neurostimulation during sleep elicits electrophysiological responses that predict behavioral changes. Poster presented at *The 25th Annual Meeting of the Cognitive Neuroscience Society*, Boston, MA.

Hubbard, R.J. & Sipolins, A., & Zhou, L. (2017). Enhancing Learning Through Virtual Reality and Neurofeedback: A First Step. Talk presented at *The 7th International Conference on Learning Analytics and Knowledge*, Vancouver, CA.

Hubbard, R.J. & Federmeier, K.D. (2017). Precursors and Processes of Prediction: A Word-Stem Completion ERP Study. Poster presented at *The 24th Annual Meeting of the Cognitive Neuroscience Society*, San Francisco, CA.

Norton, J.J.S., **Hubbard, R.J.**, Smith, C., & Bretl, T. (2017). Classification of neural responses to contextually constrained sentence endings using single trial EEG data. Poster presented at *The 24th Annual Meeting of the Cognitive Neuroscience Society*, San Francisco, CA.

Hubbard, R.J. & Federmeier, K.D. (2016). An Electrophysiological Investigation of the Effects of Expectedness, Sentential Constraint, and Plausibility on Memory for Words. Poster presented at *The 56th Annual Meeting of the Society for Psychophysiological Research*, Minneapolis, MN. (**Student Poster Award Winner**)

Leckey, M., **Hubbard, R.J.**, & Federmeier, K.D. (2016). Probability, semantics, syntax, memory: Within subject comparisons of late positive components. Poster presented at *The 8th Annual Meeting of the Society for the Neurobiology of Language*, London, England.

Hubbard, R.J. & Federmeier, K.D. (2016). Encoding the Context: Effects of Sentential Context and Predictability on Recognition Memory. Poster presented at *The 12th Annual Meeting of the Context and Episodic Memory Symposium*, Philadelphia, PA.

Lucas, H.D., Gupta, R.S., **Hubbard, R.J.**, & Federmeier, K.D. (2016). An ERP study of adult age differences in the use of self-directed conceptual combination to construct unitized memory representations. Poster presented at *The 23rd Annual Meeting of the Cognitive Neuroscience Society*, New York, NY.

Rommers, J., **Hubbard, R.J.**, Federmeier, K.D. (2016). Effects of sentential constraint and expectancy on subsequent memory in older adults. Poster presented at *The 23rd Annual Meeting of the Cognitive Neuroscience Society*, New York, NY.

Hubbard, R.J. & Federmeier, K.D. (2015). Predictors and Characteristics of Word Stem Completion. Poster presented at *The 56th Annual Meeting of the Psychonomic Society*, Chicago, IL.

Hubbard, R.J., Rommers, J., Jacobs, C.L., & Federmeier, K.D. (2015). Electrophysiological Predictors of Successful Memory During Encoding of Sentential Information Vary Based on Constraint and Predictability. Poster presented at *The 7th Annual Meeting of the Society for the Neurobiology of Language*, Chicago, IL.

Hubbard, R.J., Rommers, J., Jacobs, C.L., & Federmeier, K.D. (2015). Effects of Expectedness and Sentential Constraint on Memory for Words: Behavioral and Electrophysiological Evidence. Poster presented at *The 55th Annual Meeting of the Society for Psychophysiological Research*, Seattle, WA.

Lucas, H. D., **Hubbard, R.J.**, Abusager, K., and Federmeier, K. D. (2014). An ERP investigation of the formation of unitized memory representations of arbitrary word pairs. Poster presented at *The 44th Annual Meeting of the Society for Neuroscience*, Washington, DC.

Hubbard, R.J. & Gonsalves, B. (2014). Unitization of Pseudowords: An ERP Investigation of the Role of Semantic Information. Poster presented at *The 21st Annual Meeting of the Cognitive Neuroscience Society*, Boston, MA.

Hubbard, R.J. & Gonsalves, B. (2013). An ERP Investigation of Unitization of Abstract Visual Stimuli: The Role of Conceptual Information. Poster presented at *The 20th Annual Meeting of the Cognitive Neuroscience Society*, San Francisco, CA.

Hubbard, R.J. (2010). Recollection and Familiarity in Chromosome 22q11.2 Deletion Syndrome. Presented at the *21st Annual Undergraduate Research, Scholarship and Creative Activities Conference*, UC Davis.

PATENTS

Ryan J. Hubbard & Praveen K. Pilly (2019). Method and system for improving quality of life for the elderly through neurostimulation. *US11285319B1*.

Payel Das & Ryan J. Hubbard (2017). Adaptive Filtration of Sweat Artifacts During Electronic Brain Monitoring. *US20190008383A1*.

TEACHING EXPERIENCE

UBISS – International UBI Summer School, University of Oulu

Summer 2023

The Mind Electrified: EEG/ERPs in the Lab and in the Wild

Co-instructor for weeklong workshop for doctoral students. Lectures on EEG/ERP methods, and hands-on analysis practice / coding in MATLAB and in-lab EEG data collection. First UBISS workshop to receive max grade from all respondents across every evaluation criteria.

University of Illinois at Urbana-Champaign

Spring 2016 – 2017

Psychology 499: “Psychology Honors Seminar”

Teaching assistant for 3-semester long honors course. Assisted students in developing experimental materials and edited writing samples. Gave statistical and career advice.

2013 - 2016

EEG Discussion Group

Organizer and discussion leader. Lead a discussion group on advanced EEG methods, such as time-frequency analysis, rERPs, MEMs, and classification.

Summer 2015 **Psychology 204: “Intro to Brain & Cognition”**
Instructor. Developed and administered curriculum, lectures, daily quizzes,
and exams.

Spring 2014 **Psychology 204. “Intro to Brain & Cognition”**
Teaching assistant. Developed lectures, held office hours and review
sessions, delivered guest lectures, and assisted students.

AD HOC JOURNAL REVIEWING

<i>Behavioral Brain Research</i>	<i>Laterality</i>
<i>Brain & Language</i>	<i>Nature Communications</i>
<i>Cerebral Cortex</i>	<i>Neuroimage</i>
<i>Cognition</i>	<i>Proceedings of the National Academy of Sciences</i>
<i>Cognitive Processing</i>	<i>Psychological Medicine</i>
<i>Heliyon</i>	<i>Psychology and Aging</i>
<i>Journal of Cognitive Neuroscience</i>	<i>Psychonomic Bulletin and Review</i>
<i>Journal of Memory and Language</i>	<i>Psychophysiology</i>
<i>Language, Cognition, and Neuroscience</i>	

PROFESSIONAL AFFILIATIONS

Cognitive Neuroscience Society
Psychonomic Society
Society for Learning Analytics Research
Society for the Neurobiology of Language
Society for Neuroscience
Society for Psychophysiological Research